7.62-mm SVD DRAGUNOV SNIPER RIFLE

TECHNICAL DESCRIPTION AND SERVICE MANUAL



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INTRODUCTION

Technical Description and Service Manual of the 7. 62-mm Dragunov sniper rifle (SVD) is intended for studying the rifles and optical sights and keeping them in constant fighting ready for action.

This paper includes specifications and data of the rifle and optical sight design and operation, as well as main rules necessary to provide for the proper maintenance of the rifle with the sight and full using of their technical capabilities.

Since efforts are continuously made to improve the rifle and its completing articles, minor changes in the Technical Description may be introduced without special notice.

1. TECHNICAL DESCRIPTION

1.1. Purpose of rifle

1.1.1. The 7. 62-mm Dragunov sniper rifle is a sniper's weapon and is designed to destroy various single targets, which may be collapsible, moving, open and screened (Fig. 1).

The sniper optical sight is intended for precise aiming of the sniper rifle at various targets.



Fig. 1. 7.62-mm Dragunov sniper rifle with optical sight and knife bayonet:

1 - 7.62-mm Dragunov sniper rifle;
2 - sniper optical sight PSO-1;
3 - knife bayonet.

1.1.2. The sniper rifle uses rifle cartridges with ordinary, tracer and armor-piercing-incendiary bullets or rifle sniper cartridges. The fire is delivered in single shots.
1.1.3. The optical sight permits to conduct night firing at infrared sources and under bad conditions of illumination, when it is difficult to fire at targets with the open sight.

When observing the infrared sources, the rays radiated by the source pass through the sight objective and effect the screen, located in the focal plane of the objective lens.

In place of acting the infrared rays luminescence appears on the screen. It results in a visible source image in the form of a round greenish spot.

1.2. Technical data

1.2.1. For basic ballistic and design characteristics of the rifle and the rifle cartridge and for design data of the optical sight refer to Table No. 1.

Table No. 1

Characteristics	Nominal Value
1. Caliber, mm	7.62 x 54R
2. Number of grooves	4
3. Sighting Range, m: with optical sight with open sight	 1300 1200
4. Muzzle velocity, m/sec	830
5. Killing range, m	3800
6. Mass of rifle without knife bayonet, with optical sight, empty magazine and cheek plate, kg	4.3
7. Magazine capacity, cartridges	10
8. Length of rifle, mm: without knife bayonet with adjoined knife bayonet	 1220 1370
9. Mass of cartridge, g	21.8
10. Mass of ordinary bullet with steel core, g	9.6
11. Mass of powder charge, g	3.1
12. Optical sight magnification	4-fold
13. Field of sight vision, degree	6
14. Diameter of pupil, mm	6
15. Eye relief, mm	68.2
16. Resolution, second	12
17. Length of sight with eye shield and advanced blind, mm	375
18. Sight width, mm	70
19. Sight height, mm	132
20. Mass of sight, g	616
21. Mass of sight with SPTA set and slip cover, g	926

1.3. Rifle components

1.3.1. The set of the sniper rifle includes (Fig. 1):

- sight PSO-1 - 1 pc.;
- knife bayonet - 1 pc.;
- carrier for a sight and magazines (Fig. 3) - 1 pc.;
- bag for SPTA (Fig. 4) - 1 pc.;
- sling for carrying small arms (Fig. 5) - 1 pc.;

1.3.2. The sniper optical sight is delivered complete with a slip cover (Fig. 6) and individual SPTA set (Fig. 11).

1.4. Design and operation of rifle

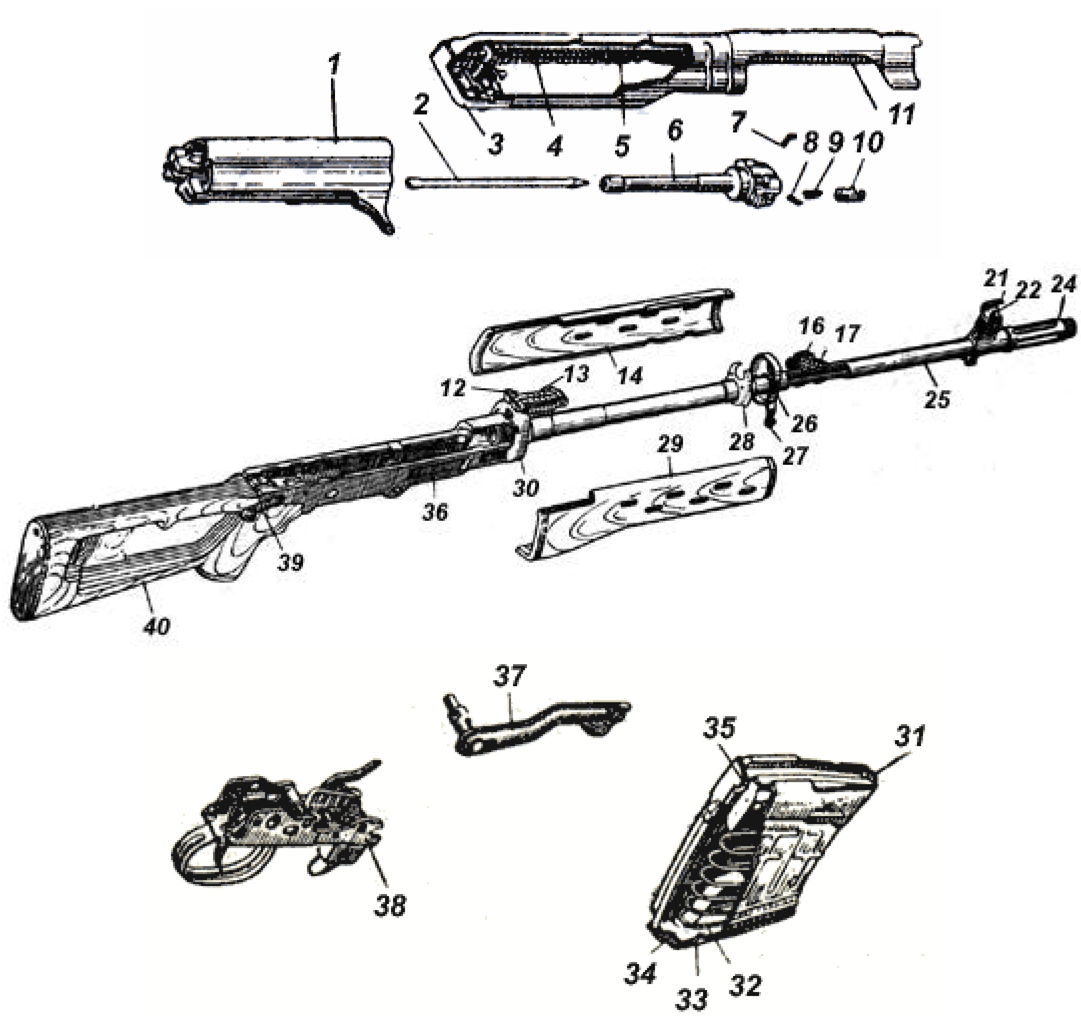


Fig. 2. 7.62-mm Dragunov sniper rifle:

Fig. 2. 7.62-mm Dragunov sniper rifle continued:
1 - bolt support; 2 - firing pin; 3 - cover; 4- guiding rod; 5 - guiding bushing; 6 - bolt; 7 - extractor pin; 8 - firing pin stud; 9 - extractor spring; 10 - extractor; 11 - return spring; 12 - sight leaf slide; 13 - sight leaf; 14 - hand guard, L.H. ; 15 - pusher spring; 16 - gas tube latch; 17 - gas chamber; 18 - gas piston; 19 – gas tube 6B1; 20 - gas regulator; 21 - front sight body; 22 - front; 23 - pusher; 24 - front sight base; 25 - barrel; 26 - upper band, assembly; 27 - band axle pin; 28 - oil seal, assembly; 29 - hand guard, R. H. ; 30 - upper band with spring; 31 - magazine body, assembly; 32 - magazine spring; 33 - magazine cover; 34 - sight leaf, assembly; 35 - follower; 36 - receiver; 37 - accidental shot safety device; 38 - firing and trigger mechanism; 39 - cover axle pin; 40 – butt assembly.

1.4.1. The sniper rifle consists of the following main parts and mechanisms (Fig. 2):

- barrel with receiver;
- bolt with bolt support;
- safety lever, assembly;
- firing and trigger mechanism;
- cover with retracting mechanism;
- magazine;
- butt;
- upper band, assembly;
- hand guard, L.H., assembly;
- hand guard, R.H., assembly;
- sight leaf, assembly;
- front-sight base and body, assembly.

1.4.2. The sniper rifle is a self-loading weapon. The reloading of the rifle is based on utilizing the energy of powder gases which arc channeled from the barrel bore to the gas piston.

Upon firing, a certain amount of the powder gases following the bullet flows through the port in the barrel bore wall into the gas chamber, exerts pressure upon the front wall of the gas piston and throws back the piston with pusher and, consequently, the bolt support into the rearward position.

As the bolt support travels rearward, the bolt opens the barrel bore, the cartridge case gets removed from the cartridge chamber and ejected out of the receiver. The bolt support compresses the return springs and cocks the hammer; i. e. engages it with the auto-safety cocking cam.

The bolt support and the bolt return to the front position under the action of the retracting mechanism; as a result, the bolt feeds the next cartridge from the magazine into the cartridge chamber and closes the barrel bore, while the bolt support disengages the auto-safety sear from the hammer. The hammer gets cocked. The bolt gets locked, after it has been turned to the left and its locking lugs engaged with recesses of the receiver.

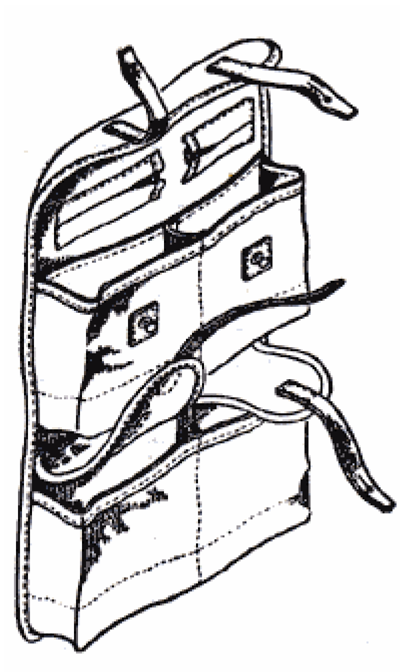


Fig. 3. Carrier for optical sight and magazines.

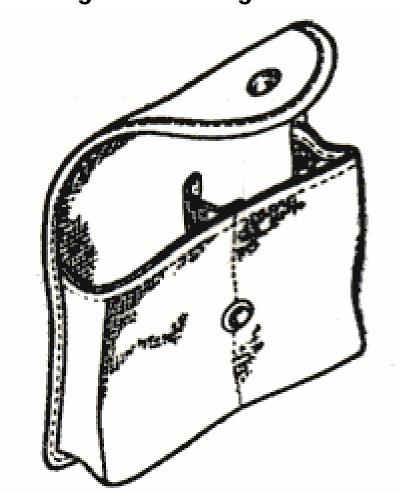


Fig. 4. Bag for SPTA.

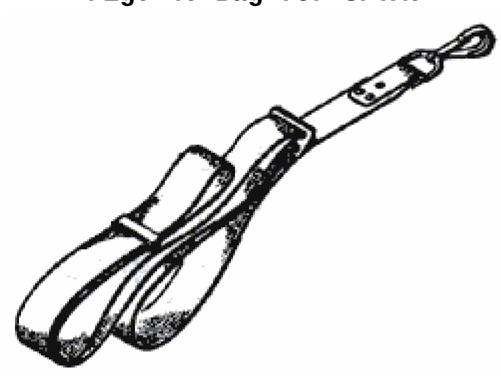


Fig. 5. Sling for carrying small arms.

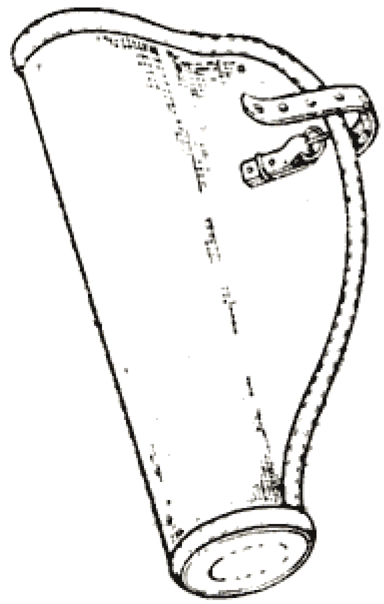


Fig. 6. Slip cover for sight.

To fire a shot, it is necessary to release the trigger and press it anew. After the trigger has been released, the rod moves forward and its hook engages the sear and, if pressed, the rod hook turns the sear and disengages it from the hammer-cocking cam.

The hammer actuated by the mainspring turns round its pin and strikes the firing pin. The latter travels forward and impinges the primer. Thus, a shot is fired.

With the last cartridge fired and the bolt returned to the rearward position, the magazine follower lifts the bolt catch; the latter engages the bolt to stop the bolt support in the rearward position.
Thus, it is necessary to load the rifle anew.

The rifle has a gas regulator, which serves to change recoil speeds of moving parts. Under conditions of proper servicing with the parts lubricated, the gas regulator is set at division 1. On firing during a long time without cleaning and lubricating and heavy soiling of the rifle, stoppage may occur š incomplete recoil of the moving parts. In this case the regulator is set at division 2. To change the regulator from one position to another use the rim of the cartridge case or the cartridge.

1.5. Design and operation of sight and its component parts

1.5.1. The sniper optical sight PSO-1 (Fig. 7) consists of the following main parts:

- body;
- objective;
- eyepiece;
- blind;
- eye shield;
- knob with the scale of sight angles;
- knob with the scale of deflection corrections;
- handle;
- colored glass;
- guide;
- supply source;
- lamp;
- cap.

The objective in a mount with a collapsible blind is screwed into the body. The eyepiece in assembly with the eye shield is screwed into the body from another end.

On the top of the body is a knob with a sight angle scale plotted on its cylindrical portion. Inscriptions "BBepx" š "Upward", "BHN3" š "Downward", "CTn" š "MPI" and arrows, indicating the direction of the knob rotation when adjusting the sight are plotted on the knob nut.

The sight angle scale is provided with ten divisions (from 0 to 10).

The value of the scale division equals to 100 m. Beginning from division 3 it is possible to set sight angles every 50 m using the knob retainer.

On the right side of the body there is a knob with the scale of deflection corrections. The cylindrical portion of the knob is provided with 21 divisions (from 0 to 10 in both directions).

Dash lines and digits located to the right from 0 are of a black color, and those located to the left from 0 are of a red color.

The value of the scale division equals to 0š01. Deflection corrections may be set every 0-00.5 by means of the knob retainer.

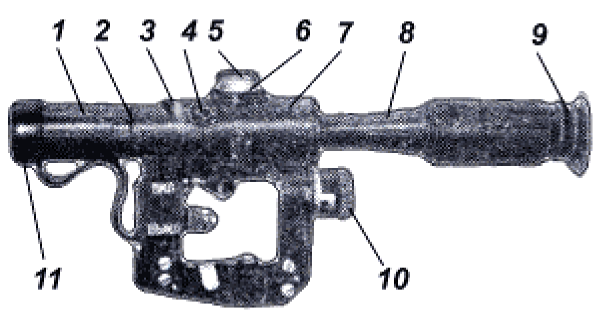


Fig. 7. Sight PSO-1:
1 - blind; 2 - objective; 3 - colored glass; 4 - handle; 5 - nut; 6 - knob; 7 - body; 8 - eyepiece; 9 - eye shield; 10 - cap; 11 – cap

Inscriptions "BnpaBo - To the Right", "BJieBo - To the Left", "CTn - MPI" and arrows, indicating the direction of rotation, when adjusting the sight are plotted on the nut fastening the knob of the deflection correction mechanism.

The band of the sight angle knob, as well as the band of the deflection correction knob each bears 60 divisions. The value of one division equals 0-00.5. Divisions on knob bands serve for reading the correction when adjusting the sight on the rifle.

The power source of the illuminating lamp is located in the seat of the body. The seat is covered with a cap.

1.5.2. The sight optical system is designed for obtaining images of objects located on the terrain and represents the monocular telescopic system with permanent magnification.

The optical system (Fig. 8) consists of objective lenses, reticle, reversing system, eyepiece lenses, screen, colored glass, light-orange glass and protective glass.

The objective is designed for obtaining the image of the observed object. In an objective focal plane an image is obtained reversed from the left to the right and from the top to the bottom.

The reversing system is intended to obtain the real correct image.

The eyepiece serves to inspect an observed image and reticle.

The light-orange colored glass improves contrast of an image in a dull weather.

The reticle represents a flat-parallel plate. The plate is provided with the scales of sight angles and deflection corrections as well as a range-finding scale. The field of vision view is shown in (Fig. 9).

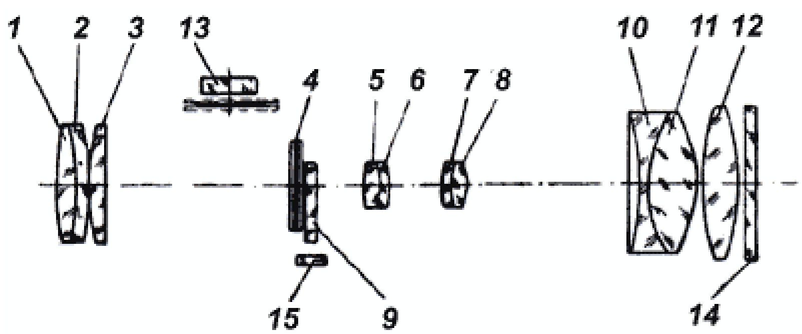


Fig. 8. Optical scheme:
1, 2 - objective lenses; 3 - welded screen; 4 - reticle; 5, 6 - lenses (relay-lens); 7, 8 - eyepiece lenses; 9 - light-orange colored glass; 10 - colored glass; 11 - protective glass

The sight angle scale represents a number of angle marks up to the range of 1300 m. When setting the sight angle knob scale at division 10, the peak of the second from the top angle mark will correspond to the range of 1100 m, the peak of the third angle mark š to 1200 m, the peak of the forth angle mark š to 1300 m.

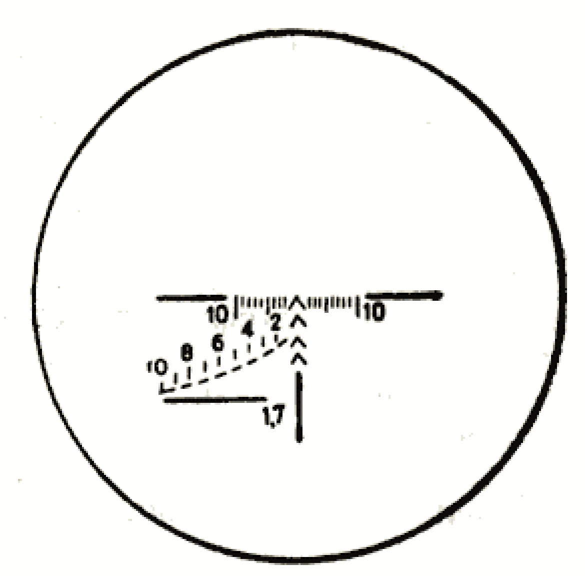


Fig. 9. Field of vision view:

Plotted to the left and to the right from the angle marks is the scale of deflection corrections. The value of each division is 0-01.

The values of deflection corrections 0-05 and 0-10 are marked out by an elongated dash line.

The value of deflection correction 0-10 is marked out by an elongated dash line and designated by a digit 10. Two horizontal dash lines are plotted from the right and from the left of the deflection correction scale. The range-finding scale located from the left under the deflection correction scale serves for detecting the range up to the target. The range-finding scale represents two lines. The upper (curve) line is calculated for a target 1.7 m in height and is marked with digits 2, 4, 6, 8 and 10.

The sight reticle is displaced in two directions, which are perpendicular to each other, but it is always remains in an objective focal plane.

** Note. It is possible to complete the rifle with the sight of PSO-1Ì2 make without the screen, colored glass and handle.*

1.6. Sniper rifle accessories

1.6.1. The sniper rifle accessories (Fig. 10) are used in disassembling, cleaning and lubricating the sniper rifle and are carried in the bag intended for the sight and magazines.

1.6.2. The set of accessories includes: a cheek plate, a cleaning rod, a scourer, a bristle brush, a screwdriver, a drift, a container and an oiler.

THE CHEEK PLATE is used when firing the rifle with the optical sight. In this case it is put on the rifle butt and fixed on the latter by means of the lock.

THE CLEANING ROD is used to clean and lubricate the barrel bore, passages and cavities of other parts of the rifle. The cleaning rod consists of three sections screwed to one another.

THE SCOURER is used for cleaning and lubricating the barrel bore as well as the passages and cavities of other rifle parts.
THE BRISTLE BRUSH is intended for cleaning the barrel bore with the RCHS solution.
THE SCREWDRIVER is used in disassembling, assembling the rifle and in cleaning the gas chamber and the gas tube. It is also used as a wrench to adjust the front sight position in height.
THE DRIFT is used for driving the pins and studs out.
THE ACCESSORIES CONTAINER houses the scourer, the bristle brush, the screwdriver and the drift. It consists of two component parts: a container-wrench and a cover.

The container-wrench is used as a handle of the cleaning rod, when cleaning and lubricating the rifle and as a handle of the screwdriver when disassembling and assembling the rifle, and as a wrench when detaching the gas tube and assembling the cleaning rod.
THE CONTAINER COVER is used as a muzzle protector in cleaning the barrel.
THE OILER is used for storage of the lubricant.

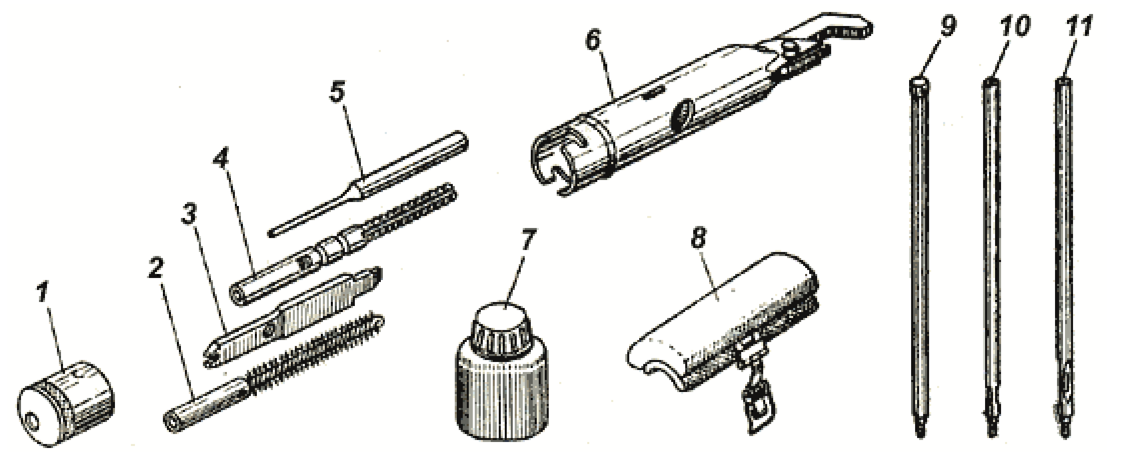


Fig. 10. Accessories to rifle:
1 - container cover; 2 - bristle brush; 3 - screwdriver; 4 - scourer; 5 - drift; 6 -container body; 7 - oiler; 8 - cheek plate; 9 - cleaning rod; 10 - cleaning rod extender; 11 - cleaning rod extender, front

1.7. Individual SPTA set to sight

1.7.1. Individual SPTA set (Fig. 11) serves for providing normal functioning of the sight and replacement of separate failed parts.
1.7.2. Individual SPTA set includes: illuminating system, colored glass, wrench, napkin, supply sources, (sections 2RC63), lamps (in cassette) and a cap.
*** **Notes.** 1. One of the sections is placed into the sight. 2. The napkin is not shown conventionally.*

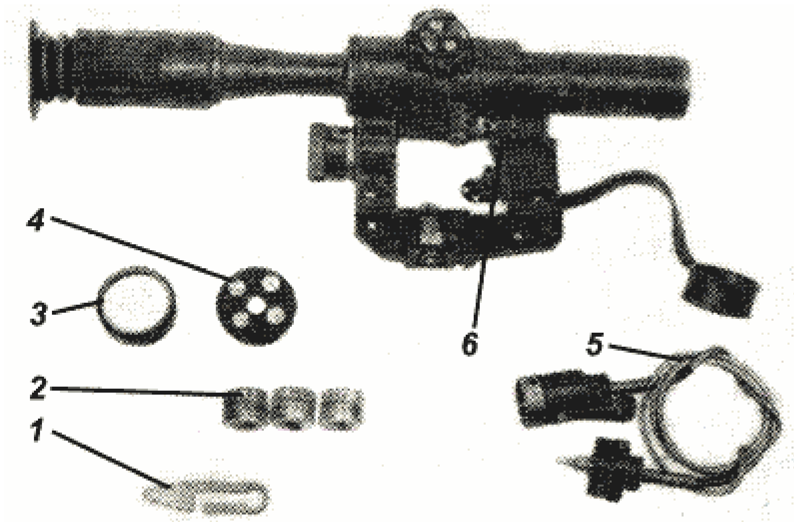


Fig. 11. Sight PSO-1 with individual SPTA set:
1 - wrench; 2 - sections of mercury-zinc cells 2RC63; 3 - colored glass; 4 - lamps CM 2.5-0.075 (in cassette); 5 - cap; 6 - illuminating system

The illuminating system is intended for lighting the reticle when working with the sight at the environmental temperature below 0 grad. Ñ. The wrench serves for screwing the reticle-illuminating lamp in and out. The napkin is intended for cleaning optical parts. Supply source, lamps and a cap are delivered as spare parts.

1.8. Tare and packing

1.8.1. The sniper rifles are supplied to the Customer in wooden chests painted in khaki color. In each chest six sniper rifles with all completing articles are placed and fastened with special inserts.
1.8.2. The chest is composed of two compartments separated with a wooden partition. The bottom as well as all walls of the chest are covered with paraffined paper. Prior to packing, the bottom and walls of the large compartment of the chest are additionally covered with inhibited paper. The small compartment of the chest is not covered with inhibited paper. The optical sights and slings for carrying small arms which are packed in this compartment are wrapped only with paraffined paper.

2. SERVICE MANUAL

2.1. General

The sniper rifle and optical sight should be kept in good repair and in a ready-for use condition, which can be obtained by timely and skilful cleaning and lubricating, careful handling, proper storage, timely technical inspection and remedying of the troubles.

2.2. Safety precautions

2.2.1. To carry out training in disassembly and assembly of the rifle use blank rifles only. Training with service rifles is allowed only in exceptional cases keeping particular care when handling parts and mechanisms.

2.2.2. Prior to preparing the rifle for firing and also prior to its cleaning and lubricating be sure that it is not loaded. During firing practice with the loaded rifle never direct the rifle to people or domestic animals.

Firing practice is carried out in the closed shooting gallery only when the suction-and-exhaust ventilation is provided there, because powder gases, liberated when shooting, are toxic. On finishing the fire unload the rifle and set it at safe.

2.3. Preparing of sniper rifle and optical sight for firing

2.3.1. Preparation of the sniper rifle and the sight for firing is accomplished with a view to ensure their trouble-free operation during firing.

To prepare the rifle and the sight for firing, proceed as follows:

a) clean the rifle;
b) inspect the disassembled rifle and lubricate it;
c) inspect the assembled rifle and sight;
d) check the rifle mechanisms and parts for proper interaction;
e) check the illuminating system and reticle illuminating set for sound condition;
f) check the sight angle and deflection correction mechanisms for proper operation;
g) check the screen of the sight PSO-1 for switching in and off;
h) activate the sight PSO-1 screen.

Directly before firing, wipe dry the barrel bore (the rifled portion and the cartridge chamber), inspect the cartridges and load the magazine with them.

For the process of activating set the screen switching lever into position along the sight axis, put the sight in such a position in which the whole surface of the light filter is exposed to the light source, radiating ultraviolet rays.

The reactivating time, when the screen is lit with daily scattered light, will be equal to 15 minutes, when lit with straight sun rays or with rays irradiated by an electric lamp (100š200W) at a distance of 20 cm, it will be within 7š10 minutes. Reactivation of the screen for a more longer period of time than indicated one does not increase its sensibility. Useful life of a reactivated screen is 6 - 7 days, after this period reactivation should be repeated. One reactivation is sufficient for the sight operation during 3 days (at 8-hours operation in a day).

2.4. Zeroing of rifle and procedure of optical sight operation

2.4.1. The sniper rifle being in the service of a subunit should be zeroed. The necessity of rifle zeroing is determined by test firing.

Rifles are subjected to test firing:

a) on reception of the rifle by the subunit;
b) after the rifle parts repair or replacement, which may affect the rifle fire accuracy;
c) in case of excessive deviation of the mean point of impact (MPI), or bullet dispersion, which does not meet the accuracy requirements. Under combat conditions the rifle accuracy should be tested periodically whenever the situation permits.

2.4.2. The sniper rifle is test-fired by four shots, aiming thoroughly and uniformly with the aid of the open sight. Fire is conducted at the black rectangle, 20 cm wide and 30 cm high, secured on a white board, 1 m high and 0.5 m wide. The point of aim is the middle of the black rectangle bottom edge. During firing when the open sight is used the normal position of the MPI is marked with chalk or a colored pencil by the plumb line, 16 cm above the point of aim. This point serves as the check point (CP).

The range is 100 m; the sight is set at 3. Firing is conducted from the prone position with support. To test-fire and zero a rifle, use should be made of cartridges with ordinary bullets having a steel core. Fire is conducted with knife bayonet removed. Upon firing the shots, examine the target and arrangement of hits; determine accuracy of fire and position of the MPI. The sniper rifle fire accuracy is considered normal, if all the four hits are arranged within the circle, 8 mm in diameter.

If the shot group does not meet the requirements, test firing is repeated.

If the second test results are unsatisfactory, the sniper rifle should be sent to the repair shop.

If the shot group is found normal, determine the MPI and its position relative to the check point.

Determination of the mean point of impact is shown in Fig. 12. The sniper rifle fire accuracy is considered normal, if the mean point of impact coincides with the check point or deviates from it in any direction by no more than 5 cm.

2.4.3. If during test-firing the MPI deviates by more than 5 cm from the CP in any direction, the position of the front sight (as to its height) or that of its body (as to side position) should be changed accordingly. If the mean point of impact is below the check point, the front sight should be screwed in, if it is above the check point, the front sight should be screwed out.

If the MPI is to the left of the CP, the front sight body should be shifted to the left, if to the right, shift the body to the right. The front sight body displacement by 1 mm to the side and one complete revolution of the front sight (when screwed in or out) will change the position of the mean point of impact by 16 cm when fire is delivered at a range of 100 m.

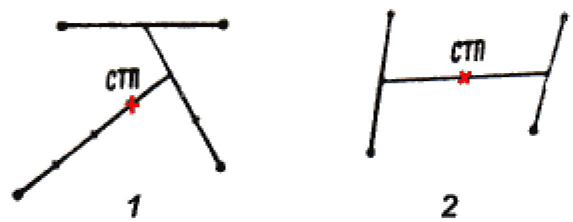


Fig. 12. Determination of mean point of impact (MPI):
1 - by consequent division of lines; 2 - with symmetrical arrangement of hits. CTn means MPI

Repeat test-firing to make sure that the above displacement of the front sight and its body is properly done.

After the sniper rifle has been zeroed, remove the old notch and make a new notch on the front-sight body.

2.4.4. To zero the rifle with the optical sight attach it to the rifle and put the cheek plate on the butt. Rotate the knobs to set the sight angle knob at division 3 and deflection correction knob at 0. Perform the test firing with the aid of the optical sight, the conditions being the same as for test firing of the rifle with the aid of the open sight, but the check point in this case is marked at a height of 14 cm from the point of aim.

If, as a result of the test-firing, all four hits are arranged in a circle, 8 cm in diameter, but the mean point of impact deviates from the check point by more than 3 cm, determine the deviation of the MPI and introduce the appropriate corrections into the settings of the nuts on knobs of the sight angles and deflection corrections.

Displacement of the nuts by one division relative to the scales on the bands of the knobs in firing at 100-m range will change the position of MPI by 5 cm. To introduce corrections release screws on the knob ends by 1š1 1/2 turns and while rotating the sight angle nut and the deflection correction nut, manually, displace them by a necessary amount and tighten the screws.

After the corrections have been introduced in the knob setting, repeat the test firing. If, as a result of the repeated test-firing, all the four hits are arranged in a circle, dia. 8 cm, the MPI has matched with the check point or deviated from it to either side by no more than 3 cm, the rifle is considered zeroed.

After zeroing the rifle, record the position of the MPI in the *Service Log*.

2.4.5. To detect the range up to the target proceed as follows:

Match the target image with the range-finding scale of the reticle so that the target base is on the horizontal line of the range-finding scale, and the target top point touches the upper (dotted) line of the scale without clearance.

Take off the range-finding scale readings in the point of touching the target.

A digit which happens to be in the point of touching determines the distance up to the target (in Fig. 13 the distance up to the target is 400 m).

2.4.6. To deliver firing at night or in twilight turn the micro-tumbler lever to the position "BKJi" (ON).

Sight angles and deflection correction angles are set in this case by counting clicks of the retainer from zero position. Bear in mind that the fixation of the sight angle knob is performed from "0" to "3" every whole division, i.e. every 100 m and further on till setting 10 every half-division i.e. every 50 m. The fixation of the knob of deflection corrections is effected every half division, i.e. every 0-00.5.

2.4.7. When working with the illuminating system it is necessary to store the set body with the section 2 RC-63 in a warm place (in the pocket of a field shirt or a sniper's overcoat.

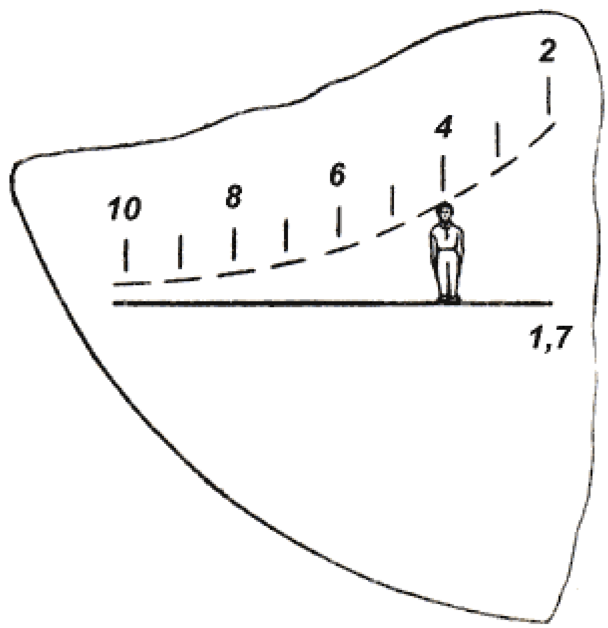


Fig. 13. Range-finding scale

2.5. Technical condition inspection, troubles and remedies

2.5.1. To check the rifle for good condition, as well at to set its further ready-for-use condition periodically inspect the rifle.

During inspection make sure that all the rifle parts are present and the external parts are free of rust, dirt, dents, scratches, nicks, chipping and other damage, since they may interfere with the normal operation of the rifle mechanisms and the optical sight.

Besides, check condition of the lubricant on the rifle parts visible without disassembling the rifle. Make sure that the magazines, the knife bayonet, the accessories, the slip cover for the optical sight, the carrier for the optical sight and magazines, as well as the bag for SPTA are not missed, make sure that there is no foreign matter in the barrel bore.

Check the parts and mechanisms for proper operation. When checking the operation of the rifle parts and mechanisms, release safety lock, retract the bolt support by the reloading handle all the way back and release it; the bolt support should be stopped in the rear position by the bolt catch.

Detach the magazine, slightly retract the bolt support by the handle and release it; the bolt support should energetically return to the front position. Set the rifle at safe and press the trigger; the trigger should not move rearward completely, and the hammer should remain cocked.

Release safety lock and press the trigger; a click should be heard, which is indicative of the energetic blow delivered by the hammer against the firing pin.

Set the rifle at safe again and attach the magazine; the bolt support should not move backward, the safety lock should be reliably retained in the required position.

Check the feed of cartridges into the cartridge chamber, extraction and ejection of fired cases (cartridges). Fill the magazine with dummy cartridges, attach it to the rifle, and without pressing the magazine latch, try to detach the magazine with the effort of the hand, the magazine should freely enter the opening of the receiver and should be securely retained by the magazine latch.

Reload the rifle several times, the dummy cartridges should be fed, without any delay, from the magazine into the cartridge chamber and rushly extracted from the receiver outward.

When checking the condition of the optical sight, make sure that the objective and eyepiece lenses are not broken. Check to see that the knobs rotate smoothly and are reliably fixed in the required position, they are free of play; the sight is free of play and the clamping screw reliably secures the sight on the rifle; the reticle illuminating set is in sound condition; to this end, fit the cap onto the objective, switch on the tumbler switch and look into the eyepiece (if the illuminating set is in good repair, the reticle is seen distinctly; if the reticle is not seen, replace the cell or the electric lamp).

If the sight is not free of play or the handle-guiding lug does not enter the recess in the bracket, with the sight reliably secured on the rifle, adjust the clamping screw.

To this end, detach the sight from the rifle, press the slide to the handle (compress the spring) and screw the clamping screw adjusting nut in or out.

Inspect cartridges before firing. When inspecting the cartridges, make sure that the cartridge cases are not bent and free of rust, the bullet does not play in the cartridge case mouth; the primer is free of verdigris and cracks, no setback of the primer occurs; are there some dummy cartridges among live cartridges or not. All the defective cartridges are to be transferred to the depot.

2.5.2. All defects of the rifle, the optical sight, magazines and accessories should be immediately eliminated. If there is no opportunity to eliminate the troubles in the subunit, transfer the rifle (the optical sight, magazines, accessories) to the repair shop.

2.5.3. Careful handling the rifle and proper care of it provide reliable, trouble-free operation and long service life of sniper rifle parts and mechanisms. However, in case of clogging and wear of rifle parts and mechanisms and in case of careless handling the rifle or in case of cartridges damage, stoppages in fire may occur.

If during firing stoppages occur, reload the rifle, for which purpose energetically retract the bolt support by the handle, release it and proceed with firing.

If the stoppage is not eliminated, determine the cause of the trouble and eliminate the stoppage as instructed in the Table No. 2.

Table No. 2

Trouble	Cause	Remedy
Cartridge not fed into chamber. Bolt in front position, but no shot fired (no cartridge in cartridge chamber)	Dirty or faulty magazine. Faulty magazine latch	Reload the rifle and proceed with firing. Replace the magazine, if stoppage is repeated. Transfer the rifle to the repair shop, if the magazine latch is faulty
Misalignment of cartridge. Cartridge with its bullet rests on barrel breech face, moving parts stop in middle position	Bent guiding lugs of magazine side walls	Holding the bolt support reloading handle, remove the misaligned cartridge and proceed with firing. If the stoppage is repeated, replace the magazine..
Misfire. Bolt in front position, cartridge in cartridge chamber, hammer released, no shot fired	Faulty cartridge. Faulty firing pin or firing and trigger mechanism, dirty or thick lubricant	Reload the rifle and proceed with firing. If stoppage is repeated, inspect and clean the firing pin and the firing and trigger mechanism; if they are broken or worn, transfer the rifle to the repair shop
Fired case fails to be extracted. Fired case in cartridge chamber, the next cartridge with its bullet rests on fired case, moving parts are in middle position	Dirty cartridge or dirty cartridge chamber. Dirty or faulty extractor or its spring	Retract the bolt support reloading handle, and holding it in the rear position, detach the magazine and remove the misaligned cartridge. Extract the fired case by the bolt or by the cleaning rod and proceed with firing. If the stoppage is repeated, clean the cartridge chamber. Inspect and clean the extractor, then proceed with firing. If the extractor is faulty, transfer the rifle to the repair shop

Table No. 2 continued:

Trouble	Cause	Remedy
Fired case stuck or fails to be ejected. Fired case is not ejected from receiver, it is in the receiver, in front of bolt or rammed by the bolt into cartridge chamber again	Dirty friction parts, gas passages or cartridge chamber Dirty or faulty extractor	Retract the bolt support reloading handle, remove the fired case and proceed with firing. If the stoppage is repeated, clean the gas passages, the friction parts and the cartridge chamber. If the extractor is unserviceable, transfer the rifle to the repair shop

2.6. Disassembly and assembly of rifle

2.6.1. The disassembly of the sniper rifle may he partial and complete: partial disassembly is performed for cleaning, oiling and inspection of the rifle. Complete disassembly is required for cleaning the rifle if it is heavily soiled and after it has been exposed to the rain or snow, or when the rifle is to be newly lubricated and repaired.

The frequent disassembly of the sniper rifle is harmful to the weapon, as it tends to increase the wear of its parts and mechanisms. When disassembling and assembling the sniper rifle do not apply an extra effort and sharp blows.

When assembling the sniper rifle, check the numbers on its parts; the number stamped on the receiver should correspond to the numbers available on all its parts.

2.6.2. For partial disassembly of the sniper rifle, adhere to the following procedure:

a. Detach the magazine. Take the magazine with the hand, press the latch, move the bottom part of the magazine forward and detach it.

Then make sure that there is no cartridge in the cartridge chamber, for which purpose lower the safety lock, retract the reloading handle of the bolt support, inspect the cartridge chamber and release the reloading handle.

b. Detach the optical sight. Raise the handle of the clamping screw and turn it towards the eye shield as far as it will go; shift the sight backward and detach it from the receiver.

c. Detach the cheek plate. Turn the fastener of the cheek plate lock downward, remove the loop from the hook of the clip and detach the cheek plate.

d. Detach the receiver cover together with the retracting mechanism. Turn the axle pin of the receiver cover backward so as to engage it with the axle pin retainer; raise the rear part of the receiver cover and detach the receiver cover together with the retracting mechanism.

e. Detach the bolt support and the bolt. Pull back the bolt support as far as it will go, raise it and detach it from the receiver.

f. Detach the bolt from the bolt support. Pull the bolt backward, turn it so that its guiding lug comes out of the shaped recess of the bolt support and move the bolt forward.

g. Detach the firing and trigger mechanism. Turn the safety lever upward till it occupies the vertical position, shift it to the right and detach from the receiver; holding the trigger guard move the firing and trigger mechanism downward to detach it from the receiver.

h. Detach the hand guards. Press the axle pin of the upper band to the gas tube so that the lug of the axle pin tongue comes out of the band recess and turn the latch clockwise as far as it will go: shift the upper band to the muzzle part; pressing the hand guard downward and shifting it sideways, detach it from the barrel.

i. Detach the gas piston and the pusher together with the spring. Pull the pusher backward, disengage its front end from the gas piston port and detach the piston from the gas tube; insert the front end of the pusher into the gas tube and compress the pusher spring till it protrudes beyond the passage of the sight bar; detach the pusher and the spring, then detach the spring from the pusher.

2.6.3. To assemble the sniper rifle after partial disassembly, adhere to the following procedure;

a. Connect the gas piston and the pusher with the spring. Fit the spring onto the rear end of the pusher; insert the front end of the pusher into the gas tube, compress the spring and insert the rear end of the pusher together with the spring into the passage of the sight bar; pull the pusher backward and remove its front end from the gas tube sideways; insert the gas piston into the gas tube, and the front end of the pusher into the piston socket.

b. Connect the hand guards. Insert the rear end of the right (left) hand guard into the lower band, press the hand guard downward and fasten it on lugs of the supporting ring; fit the upper band onto the end pieces of the hand guards and turn the axle pin of the upper band to the gas tube so as to let its lug enter the recess on the band.

c. Connect the firing and trigger mechanism. Engage the recesses of the firing and trigger mechanism body with the stop pin and press the firing and trigger mechanism to the receiver; insert the safety lever pin into the hole of the receiver, then turn the safety lever in the clockwise direction so as to let the lug of the safety lever enter the lower recess of the receiver.

d. Connect the bolt to the bolt support, insert the bolt into the passage of the bolt support, turn the bolt so that its driving lug enters the shaped recess of the bolt support and move the bolt forward as far as it will go.

e. Connect the bolt support and the bolt. Insert the guiding lugs of the bolt support into recesses of the receiver and move the bolt support forward.

f. Connect the receiver cover together with the retracting mechanism. Insert the return spring into the passage of the bolt support, insert the lugs on the front end of the cover into recesses on the lower band; press the rear end of the cover to make the cover fit tightly to the receiver, turn the axle pin of the receiver cover forward to set it on the cheek plate limiter.

g. Connect the butt cheek plate. Put the cheek plate on the butt with its fastener to the right, fit the loop onto the hook of the clip and turn fastener upward,

h. Connect the optical sight. Match the slots on the sight bracket with the lugs on the left wall of the receiver; shift the sight forward as far as it will go and turn the handle of the clamping screw towards the objective so as to let the handle lug enter the recess of the bracket.

i. Connect the magazine. Insert the front hook of magazine into the opening of the receiver and turn the magazine to yourself to let the latch engage the rear hook of the magazine.

2.6.4. To completely disassemble the sniper rifle, proceed as follows:

a. Perform the partial disassembly as instructed in item 2.6.2.

b. Disassemble the magazine. Depress the lug of the locking strip into the hole of the magazine cover and shift the cover somewhat forward; holding the locking strip remove the cover from the body; releasing the spring gradually, remove it together with the locking strip from the magazine body, then detach the follower.

c. Disassemble the retracting mechanism. Remove the front return spring from the guiding bushing; compress the rear return spring and holding the guiding rod move it downward and to yourself to withdraw the guiding rod from the shackle hole; detach the rear return spring and the guiding rod from the guiding bushing.

d. Disassemble the bolt. Use the drift to drive out the stud securing the firing pin; remove the firing pin from the bolt passage, then remove the extractor and the spring from the bolt in the same way.

e. Disassemble the firing and trigger mechanism (Fig. 14). Press the auto safety lever and disengage the auto safety sear from the hammer; holding the hammer, press the trigger and gradually release the hammer from the cocking cam; disengage the ends of the trigger spring from the hooks of the firing and trigger mechanism body. Use a screwdriver to match the lugs trigger mechanism pins with recesses located on the right-hand wall of the firing and trigger mechanism body. Drive out the trigger mechanism pins and detach these parts. Use a drift to drive out the hammer pin, detach the hammer together with the mainspring, and then remove the mainspring.

f. Detach the gas tube together with the gas regulator. Turn the gas regulator so as to match the recess on its front part with the gas tube latch, press the latch and use the container-wrench to unscrew the gas tube, then remove the gas regulator from it.

2.6.5. Reassembling the sniper rifle after complete disassembly.

For this purpose proceed as follows:

a. Connect the gas tube and the gas regulator. Fit the gas regulator onto the gas tube, press the latch of the gas tube and screw in the gas tube with the aid of the container-wrench to match the recess on the gas tube front part with the latch, depress the latch lug into the recess of the gas tube, set the gas regulator at the required division.

b. Assemble the firing and trigger mechanism. For which purpose insert the trigger together with its spring into the body, insert the pin, match its lug with the recess on the right-hand wall of the body and turn the pin by means of the screwdriver. Fit the mainspring onto the hammer journals and insert the hammer into the body. Insert the sear into the body so that its tail enters the loop of the mainspring long end; insert the pin, match its lug with the recess on the right-hand wall of the body and turn the pin by means of a screwdriver.

Insert the auto safety into body so that its tail enters the loop of the mainspring short end; insert the pin matching its lug with the recess on the right-hand wall of the body and turn the pin by the screwdriver; insert the hammer pin and engage the ends of the trigger spring with the hooks of the body.

c. Assemble the bolt. Insert the extractor together with its spring into the seat of the boll. Pressing the extractor, insert the extractor pin; insert the firing pin into the passage of the bolt and insert the firing pin stud into the hole of the bolt from the side of the guiding lug and push the stud as far as it will go.

d. Assemble the retracting mechanism. Insert the guiding rod (with its flats facing forward) into the guiding bushing from the side of the large diameter hole, fit the return spring onto the guiding bushing from the side of the rod and compress the spring so that the end of the guiding rod with its flats comes out from under the spring; holding the guiding rod in such a position insert it together with the spring and the bushing into the lower hole of the shackle, then move the rod forward along the facets of flats into the upper hole; release the spring (its end should enter the shackle cup); fit the second return spring onto the guiding bushing.

e. Assemble the magazine. Insert the follower and the spring into the magazine body; compress the spring to fit the locking strip into the body and, holding it in that position, put the magazine cover on the body so that the lug of the locking strip enters the hole of the cover.

f. Further on proceed with assembly as instructed in item **2.6.3.**

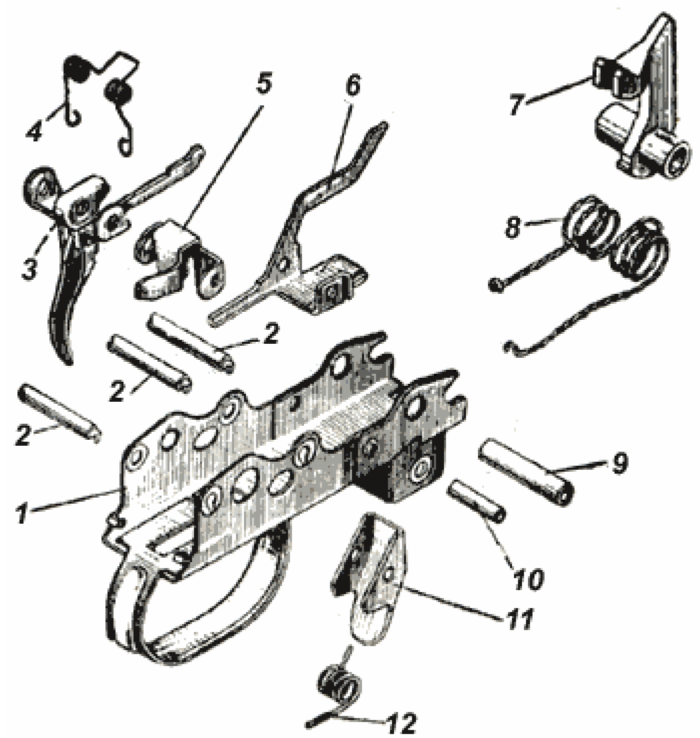


Fig. 14.Firing and trigger mechanism:
1 - firing and trigger mechanism body; 2 - trigger mechanism pin; 3 - trigger with rod; 4 - trigger spring; 5 - sear; 6 - auto safety; 7 - hammer; 8 - mainspring; 9 - hammer pin; 10 - magazine latch pin; 11 - magazine latch; 12 - magazine latch spring.

2.7. Cleaning and lubrication

2.7.1. The rifle should be cleaned in the following cases:
a. when preparing the rifle for firing;
b. after firing with live and blank ammunition, immediately after finishing the fire;
c. after guard duty or field exercises without firing, just on return to the barracks;
d. in combat situation and prolonged tactical exercises, daily during lulls of the fight and during the intervals in the exercises;
e. if the sniper rifle is not in use, at least once a week.

2.7.2. Lubricate the sniper rifle after cleaning. Apply lubricant only to the well-cleaned and dry surfaces of the metal immediately after cleaning to avoid the adverse effect of moisture on the metal.

2.7.3. For cleaning and lubricating the rifle following materials are used:

- liquid rifle oil for cleaning the rifle and lubricating its parts and mechanism, when the ambient temperature is within +50 grad. C to -50 grad. C;
- rifle oil for lubricating the barrel bore, the rifle parts and mechanisms after their cleaning, the said oil is used when the ambient temperature exceeds +5 grad C;
- RCHS solution for scouring out the barrel bore and other parts affected by the powder gases.

Note *- The RCHS solution is prepared in a subunit. The composition of the solution is as follows:*

- *drinking water - 1 L;*
- *ammonium carbonate - 200 g;*
- *potassium bichromate - 3-5 g.*

The RCHS solution is prepared in the amount required for scouring the weapon in the course of 24 hours. Small amount of the RCHS solution may be stored in tightly plugged glass vessels, away from heaters (in a dark place) for not more than 7 days. It is prohibited to fill the oilers with the Ð×Ñ solution.

- waste or special paper KB-22 for wiping, scouring and lubricating the sniper rifle;
- tow free from boon only for scouring the barrel bore out.

2.7.4. To clean the sniper rifle, proceed as follows:
a. Prepare materials for cleaning and lubrication;
b. Disassemble the sniper rifle;
c. Prepare accessories for use during cleaning;
d. Scour out the barrel bore.

To scour out the barrel bore with liquid rifle oil put the tow on the scourer end and place the tow fibers along the scourer rod; soak the tow in liquid rifle oil. Insert the cleaning rod with the scourer and the tow into the barrel bore and secure the container cover on the flash eliminator. Holding the rifle with one hand smoothly move the

scourer with the tow forward along the entire length of the barrel bore several times. Remove the cleaning rod, change the tow, soak it in liquid rifle oil and, adhering to the above procedure, scour the bore several times. Then thoroughly wipe the barrel bore with the clean dry tow, then with a clean waste cloth. To clean the barrel bore with the Ð×Ñ solution, use the brush soaked in the solution; then wipe the barrel bore with tow. Proceed with cleaning the bore with the RCHS solution to completely remove the fouling. Having cleaned the rifled portion of the bore, clean the cartridge chamber.

e. Clean the gas chamber and the gas tube with the help of the cleaning rod or a wooden stick, wrapped with waste cloth around, washed with liquid rifle oil or the Ð×Ñ solution; wipe the gas chamber and the gas tube dry after they have been cleaned; wipe the barrel bore with waste cloth once more and inspect it to see that no tow, waste cloth, rags or foreign matter are left therein;

f. Clean the receiver, the bolt and the gas piston with waste cloth soaked in liquid rifle oil or the Ð×Ñ solution, then wipe them dry;

g. Wipe dry the rest metal parts with waste cloth;

h. Wipe the wooden parts with dry waste cloth.

2.7.5. Lubricate the sniper rifle as follows:

a. Lubricate the barrel bore with the help of the scourer and the waste cloth, soaked in lubricant; lubricate the cartridge chamber;

b. Lubricate all the remaining metal parts and mechanisms with oiled waste cloth;

c. Apply a thin layer of lubricant, as excessive lubrication tends to increase soiling of the rifle parts and may result in stoppages during firing;

d. Do not lubricate wooden parts.

2.7.6. Assemble the rifle and check the functioning of its parts and mechanisms.

2.7.7. Wipe the external surfaces of the optical sight with clean waste cloth. Remove the cap of the reticle illuminating set and wipe the cell, the body and the cap. Should the surfaces of the objective and eyepiece lenses be soiled, wipe them with cloth. Never wipe the lenses and glasses with a waste cloth, already used for wiping other parts of the sight. Do not lubricate them or touch with fingers. It is prohibited to strip the sight.

2.8. Storage and transportation of rifle

2.8.1. The rifle should be always kept unloaded, the optical sight and the magazine should be detached, the knife bayonet removed, the hammer released from the cocking cam, the rifle set at safe, the sight slide set at the division "n".

2.8.2. In barracks and in camp keep the rifle in arm racks, keep the optical sight covered, keep magazines, a carrier for the sight and magazines, the knife bayonet in scabbard, a bag for the SPTA, the sling for carrying the small arms and accessories in a special section of the same arm rack. The carrier for the optical sight and the magazines, the slip cover and the sling should be clean and dry.

2.8.3. In case of a temporary stay in some building keep the rifle in a dry place, away from a door, stoves and heaters. In combat situation hold the rifle with the hands.

2.8.4. In field exercises and on march, carry the rifle in the "slung" position. The sling should be so adjusted as to prevent the rifle from striking against the hard objects of the accoutrements. The rifle is

carried with one magazine attached. The rest magazines are in the carrier.
2.8.5. When traveling by trucks or armored personnel carriers hold the rifle between the knees, in the vertical position, and when traveling by tanks hold the rifle with the hands, taking care to protect from striking against the armor.
2.8.6. When transported by railway or by water, place the rifle on a special arm rack. If the carriage or the ship is not furnished with arm racks, hold the rifle with the hands or put it on the shelf, in doing so make sure that it will not drop or be damaged.
2.8.7. To prevent the barrel from building or rupture, never plug the bore with anything.
2.8.8. Prevent the optical sight from dropping, protect it from sharp blows and jolts, and prevent moisture and dust from getting inside the optics. Keep the optical sight protected with the cover in dry heated premises; if the sight is attached to the rifle, but fire is not delivered, protect the sight with its slip cover. Wipe thoroughly wet sights with dry waste cloth, and dry the slip covers. It is prohibited to keep the sights near stoves and bonfire.

Authors Notes:

I have adapted this manual from resources obtained at **http://kalashnikov.guns.ru/manual/english/svd/1.html**

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Any comments or suggestion to improve this document. Please forward to: **hootbro@angelfire.com**